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National efforts to enhance local climate policy in the Netherlands

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RESEARCH ARTICLE

National efforts to enhance local climate policy in the Netherlands

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Abstract
This work investigates how and why climate change policy initiatives are taken at a local level against the background of the evolution of national policy in the Netherlands. The central government actively promotes climate policy initiatives at a local level through subsidies related to a menu of possible action. The case studies illustrate how different cities make different choices; thereby demonstrating the effectiveness of a flexible policy. The work concludes that transferring authority and resources to the local level may make it easier to develop and effectively implement climate change policy; but that, as yet, there is no hard evidence to demonstrate whether this is indeed the case as the policies have only just been initiated.

Keywords: *Climate policy, local policy, Netherlands, BANS*

1. Introduction

The problem of climate change is so complex that it calls on all actors to take action. Given the slow progress at an international level, this work examines the issue: What kinds of measures and policies are being taken at national and local level to address the issue of climate change in the Netherlands? What is the mandate of local actors and what is the scope of measures they can take? This article discusses national policy and then explores local strategies adopted by municipalities. It is based on an assessment of policy documents and information published by cities and non-state actors on websites, data collected by students on site visits and interviews conducted by the authors.

2. National policy in the Netherlands

2.1. National policy

The Netherlands was one of the first countries to develop a national climate change policy. In 1990, it aimed to reduce national emissions of CO_2 at 1990 levels by 3 – 5% in 2000 (VROM

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1990; Swager & Gupta 1991). A National Climate Policy Plan was drawn up in 1990 and follow-up plans were prepared regularly since then. However, fifteen years later, the targets for 2000 were not achieved and the emission levels of CO_2 were 6% higher in 2000 instead (Bollen et al. 2005).

As party to the Kyoto Protocol on climate change, the Netherlands is now legally bound to reduce its emissions by 6% in 2008 – 2012 with respect to 1990 levels. In 2005, the government assessed that it was likely to meet its Kyoto goals with a certainty of 90% (VROM 2005).

The current national climate policy (FNEPP 2001) aims for a safe and healthy environment, in an attractive living space without damaging global biodiversity and resources within 30 years. On climate change, the country moves from the starting point that global temperatures should not rise beyond 2 degrees above pre-industrial levels, and that Europe should reduce its emissions by 40 – 60% by 2030. The Netherlands aims to promote renewable energy; enhance energy efficiency and develop new energy technologies. For this, a transition agenda has been developed (EZ 2006) and different sectors are now participating in this agenda.

In order to reduce its own greenhouse gas (GHG) emissions by 6%, i.e. about 200 Mt over five years, the government aims to reduce about 100 Mt via international project based emissions trading and 100 Mts via domestic action. The domestic target has been allocated in quantitative terms to various sectors and the responsible ministries and between domestic action and emission credits purchased abroad (VROM 2006).

At a national level, in relation to adaptation, the Netherlands has been regularly improving its primary water defence system and at local level, the focus has been on the creation of water storage basins and increasing the drainage capacity of the sewer system. The Netherlands is currently developing an adaptation strategy to make it climate proof by 2015 inspired by the policy brief on Water Management in the 21st Century (Commissie Waterbeheer 21e Eeuw 2000).

2.2. The division of authority

The Netherlands is a decentralized unitary state. The unitary character is clear in that most of the tax returns go to, and most policy is made at central government level. The decentralized character is evident from the consensus oriented policy process between government and other actors and since the formal centralized power of state is often not used (Huitema et al. 2003).

On climate change, the FNEPP (2001) states that there should be greater integration between environmental and spatial policy, between the policies developed by different administrative levels and that responsibility should be moved to lower levels of government. The central government develops strategic plans, climate goals, policies and mechanisms and has instruments for implementation. The provinces have limited powers on strategic planning and focus on specific issues like spatial planning. They may be responsible for redistributing subsidies from the central to lower governments. The municipalities may make strategic plans at local scale and may develop policies on spatial issues, construction and housing, transport, environment and municipal management. Most municipalities do not have their own budgets for climate change related issues.

2.3. Local policy in the Netherlands

Since Dutch cities had units that emitted GHGs, good spatial policy and urban design could reduce GHGs at city level (Deelstra 1991; Gupta 1991). In 1993, the Ministry of

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Environment (VROM) and the Association of Dutch Municipalities (VNG) published a brochure focusing on local ''climate change'' policies and projects including, for example, the early environmental action plan of the Amsterdam Power Company, the E-Team in The Hague, Ecolonia—a housing project in Alphen aan de Rijn and the local environmental policy plans of Delft and Breda (VROM & VNG 1993). The brochure was meant to encourage other cities to take similar action. Subsequently, 114 cities and 11 provinces joined the Climate Alliance, a network to develop policies and learn from each other.

Local policymaking was promoted through the allocation of additional funding under the NEPP (e.g. BUGM for 1990–1995 and the VOGM for 1996–1998). In 1999, a national policy agreement on climate change, *Bestuursaccord Nieuwe Stijl* (BANS), was negotiated with about half of the 487 municipalities of the Netherlands and 12 Provinces (see Figure 1). The Cabinet provided a subsidy of 37 million Euros for this scheme in 2002 and an additional 6 million Euros annually in 2007 (Staatscourant 2006). BANS covers 50% of the costs incurred by local government while the other 50% should come from EU, provincial, private or municipal funds.

The BANS programme has seven themes—municipal buildings and installations; housing (new and existing); business (fixtures, fittings and business parks); agricultural sector; traffic and transport; sustainable energy; and international cooperation (Menukaart Klimaatbeleid BANS, SenterNovem 2006b). The local authorities can choose from a menu of policy options which fall into three different categories—active, front runner and innovative. 60% of the participating municipalities have a permanent budget for local climate policy. 20% of the municipalities calculate local GHG emissions, and 29% of the applicants for BANS subsidies have applied for measures that fall into the category of 'innovative policy'. However, as participation in the BANS programme cannot be enforced, mechanisms for monitoring and improvement are limited.

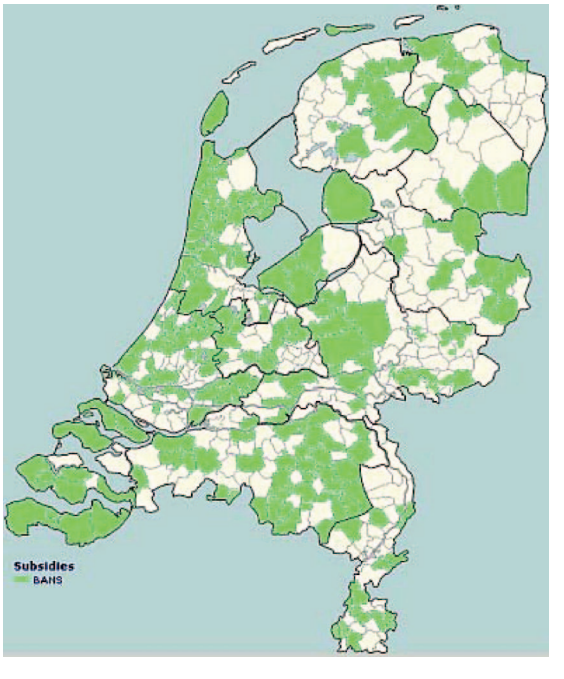

Figure 1. Municipalities participating in the BANS programme (Source: www.SenterNovem.nl, July 2, 2007).

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3. Case studies of local policy

3.1. Introduction

This section describes some of the policies that are being promoted at local level in large cities like Amsterdam and Rotterdam, in medium-sized cities like Eindhoven, Breda and Leiden and in smaller places like Castricum and Stede Broec (see Figure 2). These case studies elaborate on the number of inhabitants, total local greenhouse gas emissions, the local climate policy in place including reduction goals and climate related projects being carried out in the city and other relevant information.

3.2. Amsterdam

Amsterdam, the capital of the Netherlands, has 743,000 inhabitants. The municipality prepares environmental plans every four years. The Environmental Policy Plan of 2004 includes policies that must be 'SMART' (specific, measurable, acceptable, realistic and time-specific). It has four themes: noise pollution, air pollution, climate change and the sustainable use of raw materials. In 2007, the municipality prepared its first climate programme with its own budget line for implementation by a special climate programme manager, partly subsidised by BANS. Since Amsterdam consists of 15 boroughs, implementation of central city policy is laid down at this lower level.

Figure 2. Map of the Netherlands with the location of the described cases.

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Annually, Amsterdam, including local industry, emits 8,300 kt of CO_2 (Milieudefensie 2007). The city aims to reduce its emissions by 550 kt in 2010 (Gemeente Amsterdam 2004). Presently, Amsterdam is implementing projects aiming to improve energy efficiency and stimulate use of non-fossil fuels. Energy-saving measures are being taken in projects, such as the Zuidas, Parkstad and IJburg. The Zuidas energy saving measures aim to reduce emissions by 8 kt in 2007, through 30 kt in 2010 to 60 kt in 2020. Companies participating in this initiative wish to project an environmentally conscious image and lower their energy costs. On a micro scale, the municipality is persuading lower income families to use less energy by offering energy advice and more efficient equipment, such as efficient light bulbs. When the national government suddenly ended its subsidy programme, the municipality decided to subsidize solar pv and solar heat installations from its own budget.

About 10,000 – 25,000 houses in Parkstad, 2.6 – 6.6% of the total stock in Amsterdam, will be connected to district heating that reuses the energy generated from waste incineration thereby leading to a projected saving of 268 kt CO_2 annually. Additional sustainable energy measures to reduce CO_2 emissions by 50% in this part of the city are being explored through a participatory process with local actors. The municipality is considering whether to implement similar district heating in the northern part of the city. District heating is already been implemented in the boroughs Zuid-Oost, IJburg, and Zeeburg.

The expansion of the wind park in Westpoort is expected to reduce CO_2 emissions by 23 kt annually. Municipal purchase of low CO_2 electricity should reduce emissions by 130 kt annually. Other measures by the municipality in terms of its own renovation and improvement of its fleet and its role in new housing projects should reduce emissions by 27 kt annually. The municipality, in cooperation with the environmental agency of IJmond, is forcing local supermarkets to take ambitious energy efficiency measures in their cooling and refrigeration installations. However, the legality of this action is now under investigation. The Municipal Public transportation company (GVB) is part of the Clean Urban Transport for Europe (CUTE) project and operates two hydrogen fuelled fuel cell buses.

3.3. Rotterdam

Rotterdam, with a population of 585,000, has high local emissions of 24,000 kt annually which comprises 25 percent of total Dutch emissions. 4/5th is emitted by industry and the remainder is produced by residents (Milieudefensie 2007). Rotterdam implements 20 projects within BANS, varying from raising awareness of city servants on the impacts of their commuting habits, to the use of residual industrial heat in housing projects. It recently wrote a plan to improve air quality, including the reduction of GHGs. Most of the climate policy links up to air quality improvement (DSV & Gemeente Rotterdam 2005).

Within BANS, Rotterdam aims to implement the following projects: to improve the environmental sustainability of public transport; to provide 50,000 houses with district heating and to discourage the use of fireplaces. All these measures are expected to reduce emissions by 70 kt annually. The possibility of transporting CO_2 from the Shell refinery in Botlek to the greenhouses in Bleiswijk, Berkel en Rodenrijs and Bergschenhoek are being explored. The CO_2 will be used for fertilization purposes in the greenhouses. This is expected to lead to a saving of 95 million m^3 of natural gas and therefore may reduce CO_2-emissions by 170 kt annually (DCMR milieudienst Rijnmond 2006). Rotterdam aims to have 34.5 MW of wind power in the harbour area by 2010 and the first electrical bus is already on the roads. New houses have to be built in accordance with energy norms and companies that have energy bills exceeding 6,800 Euros annually will have to reduce their energy use. Since 2005,

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the municipality itself uses renewable energy for its own use and the services it provides (Gemeente Rotterdam 2002).

Some adaptation measures have been developed. The city participates in the 'Make room for the river' project of the national government by changing the closing times of local barrages and locks to ensure that when the sea level is low, these barrages and locks are closed, so that excess water in times of flooding can be stored here. Measures to strengthen local dikes are being taken in collaboration with other actors. (Provincie Zuid-Holland 2006). A scheme to separate sewage from rain water will improve the efficiency of water cleaning and reduce the chance of flooding when there is extreme rainfall. Although environmental issues were not prioritized by the former city government, the municipality initiated limited proactive climate policy in this period.

After Rotterdam was invited to join the Clinton climate initiative, the environment rose on the political and policy agenda. Rotterdam now aims at reducing CO_2 emissions with 50% compared to 1990 by 2025 (Gemeente Rotterdam et al. 2007). The Clinton initiative aims to develop and implement actions that will accelerate the reduction of GHG emissions. It works with 40 cities that are case study areas and helps to promote good practices. In Rotterdam, the municipality, harbour and industry work together to meet the goals.

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3.4. Eindhoven

Eindhoven, with 210,000 inhabitants and some industry, emits 1200 kt of CO_2 (Milieudefensie 2007). It has developed a climate policy in cooperation with VNG and The Netherlands Organization for Energy and Environment (SenterNovem 2006b). The policy focuses on eight themes—climate change policy; municipal buildings and supplies; house-building; companies and utility building; agricultural sector; traffic and transport; sustainable energy and internationalization. It aims to integrate climate policy in local spatial planning, to monitor and evaluate this annually and to develop capacity to execute climate policy (Gemeente Eindhoven 2003).

Eindhoven aims to be a forerunner in the area of municipal buildings and supplies. With respect to the energy efficiency of new buildings, the municipality intends to go beyond the legally binding standards. In 2007, a new medium large biomass fired combined heat and power plant (CHP) started heating a municipal swimming pool and provides 90% of the electricity used by the municipality. Eindhoven has decided to use an Energy Achievement at Locations coefficient (EPL) of 7 for new building projects of more than 250 houses. The EPL, introduced by the national government in 1990, is a measure for the energy quality of a location for new buildings including the energy supply that has been made for this location. EPL has a scale from 0 to 10, where 10 is the ideal situation, in which case no fossil fuels are used. Use of small and medium scale CHP to energize blocks of houses and a strong emphasis on energy efficiency through sustainable choices in the design of houses (e.g. isolation, PV-panels, sun orientation) are means to realize this standard. On existing municipal buildings, Eindhoven will begin renovation that goes beyond legal requirements aiming for an EPL of at least 6; and will focus on purchase policy for energy. It will encourage local residents to install and use sustainable energy and will inform them about the Energy Achievement Advice. Eindhoven participates in the solar energy city project to promote the use of solar panels covering 4000 m^2 of which the municipality itself will use 500 m^2. Wind and other renewable energy are being encouraged (Gemeente Eindhoven 2003).

The municipality informs local companies about energy conservation and sustainable energy and how they can use scans to improve their energy performance; it encourages companies to make multi-year agreements and shows them how to improve transport

management. It advices companies on choosing sites, which is critical to their environmental performance.

On traffic and transport, the municipality intends to replace old cars in their fleet by energy efficient cars, promote public transport and car pooling, and is developing a traffic environment map to make bottlenecks visible. Sustainability of local public transportation is promoted by putting ambitious (however bounded to EU rules) technical requirements in their tender definitions. It also aims to develop innovative projects, such as the underground distribution of goods to enhance efficiency (Gemeente Eindhoven 2003). Many of the city's climate projects are possible because of the BANS programme.

3.5. Breda

Breda, with 140,000 inhabitants, has developed a policy in 2002, which outlines its vision for 2015 (Gemeente Breda 2002). Breda emits 1040 kt annually (Milieudefensie 2007). It aims to ensure that Breda is ''liveable'' and sustainable. The city government aims to become climate neutral in the long-term and use renewable energy (wind and biomass) to meet this goal. This transition will have a positive spill-over effect of increased local employment.

Breda has a policy that new residential buildings should be 10–15% more energy efficient than current national regulations, which is to be implemented through a cooperative capacity building programme involving the main parties. It subsidizes the installation of energy efficient lighting in houses. At two recently built residential areas, energy saving measures have been taken through connecting 350 houses to one heat pump, supplying them with heating in winter and cooling in summer and through connecting 600 houses to the return flow of the municipal heating system. Through a special method, low value heat is transformed into high value heat, reducing GHG emissions.

Breda aims at reducing energy use by businesses by 2% annually. A two year project guided by a civil servant stimulates the involved companies to make a sustainability analysis of their activities and see how they can invest in measures with a quick pay back time, since energy costs are reduced as a first step towards promoting long-term corporate social responsibility.

The province of Noord Brabant aims to develop 115 MW of wind turbines to reduce GHG emissions by 170 kt. However, the final decision on constructing the wind power turbines rests with municipalities. Breda is developing parks with big (3 MW) turbines and one has already been built, two are being built and there are plans for another 3–6 mills by 2008.

3.6. Leiden

Leiden, with 120,000 residents, annual CO_2 emissions of 599 kt, has also prepared its climate change policy focusing on energy conservation, sustainable transport and housing (Milieudienst West-Holland 2004). Leiden is developing and implementing its climate policy in close cooperation with other, mostly smaller, municipalities in its surrounding. Leiden aims to be CO_2 neutral by 2030. In close cooperation with local stakeholders, it has developed an energy-map of the city to demonstrate where cost effective CO_2 reduction options exist, showing, for example, the ''city heating'' network and how it can possibly be expanded and regions of possible underground heat and cold storage (see Figure 3).

With the local energy map in hand, the municipality has decided that every project with the equivalent of 50 households should investigate the possibilities for building an innovative sustainable energy system.

One interesting project is a model housing project called Roomburg. One hundred and thirty-one of the 1,000 houses to be built in this project will be very energy efficient.

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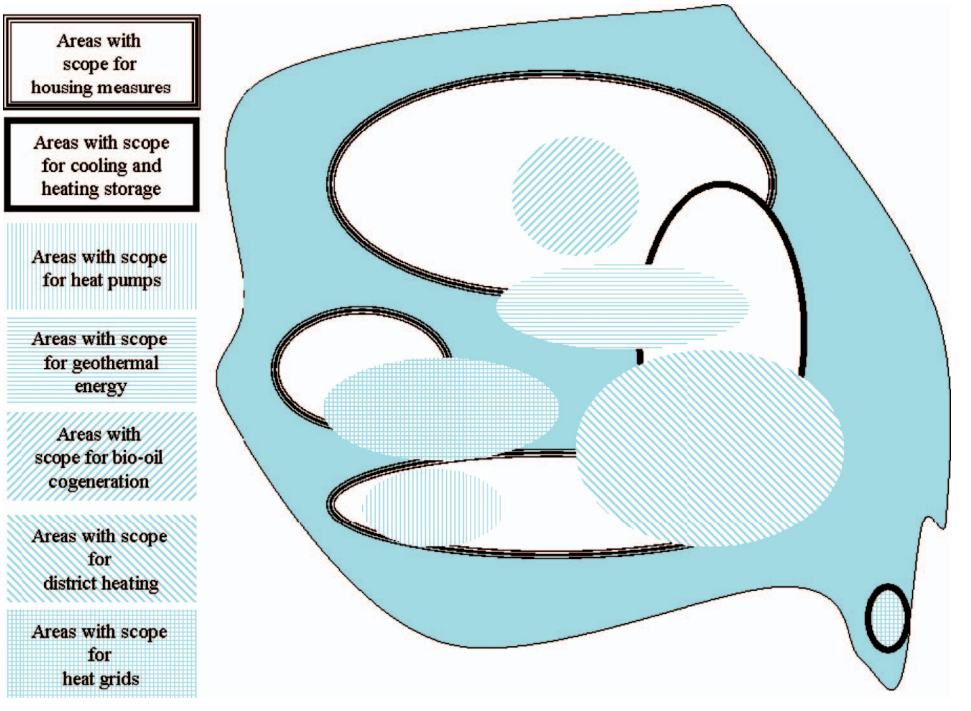

Figure 3. An abstract version of an energy map.

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These houses should have an EPC[1] below the maximum of 0.8 and this is to be achieved by developing South facing houses to reduce the need for heating. Warm cooling water from the nearby energy plants is used for heating the houses. By making use of heat exchange systems hot tap water is also produced from this residual heat. Solar panels have been installed on the roofs. This means that these houses do not have gas connections or independent central heating systems and have 50% lower CO_2 emissions than houses built in 1990. The local infrastructure encourages the use of cycles. This project, if successful, could help shape future architecture, e.g. the New Leyden project with 850 houses that meet a 0.72 EPC standard (Gemeente Leiden 2006).

Other projects are the transition to a more sustainable municipal fleet, and public awareness campaigns to promote sustainable behaviour. The municipality has opened three service centres through which citizens and small businesses will be informed, stimulated and supported in taking action on energy use and conservation.

Furthermore, when the national government suddenly ended its subsidy programme on solar energy, the municipality as in Amsterdam decided to continue the subsidy through its own budget.

3.7. Castricum

Castricum, with 35,000 inhabitants, emits 147 kt of CO_2 annually (Milieudefensie 2007). Its 2004 climate policy (Gemeente Castricum 2004) aims at using innovative policies to improve community buildings and social housing, promotes sustainable energy use and enhances the energy efficiency of city transportation. It aims to improve the EPC of government buildings and future construction by 8–12% and renovate 30% of the existing housing by 2006. It will

enhance the use of solar energy compatible energy systems or energy efficient systems in 50% of the social housing. It will participate in wind energy schemes and has a public awareness programme to enhance emission reduction at citizen level.

3.8. Stede Broec

Stede Broec, with a population of 21,000, produces 72 kt of CO_2 annually (Milieudefensie 2007). The municipality has selected goals, which it believes are achievable. BANS funds have been used to develop an active climate policy and to improve the urban and local agricultural environment. The municipality subsidizes EPC reduction in new buildings and existing municipal buildings and aims at achieving a 4–8% improvement in this sector. EPC reduction is possible by locating living rooms in new houses on the sunny side, and 70% of the new buildings will be designed accordingly. However, as average temperatures increase in the Netherlands, investment in air-conditioning is expected to reduce the benefits. This emphasizes the need for integral plan making and design. A local school participates in a scheme to reduce energy use through optimal climate control, energy efficient lighting, enhanced insulation, demand management and high efficiency boilers in return for a small subsidy and some free books and equipment. The municipality participates in a wind plan with 12 other municipalities to enhance the use of wind power in the municipality. The municipality also has initiated measures to reduce GHG emissions from the agricultural sector. In relation to adaptation, the municipality aims to build a storage site where excess rainwater can be located in times of extreme rainfall. This site can also be used as a nature reserve and for recreational purposes.

4. An assessment

Table I shows the total and per capita emissions of the cities studied. While the emissions are primarily from households and transport in most cities, in Rotterdam 80% of the emissions are from the industrial sector and in Stede Broec agriculture is also an important source.

The cities have different levels of engagement in climate policy. Some have just recently started designing climate policy (e.g. Rotterdam), while others have designed climate policy within BANS as a continuation of earlier activities, ranging from active, front-runner to innovative levels. Although the political coalitions in each of the cities are different (e.g. the green left in Amsterdam, left-right coalition in Rotterdam, centre-left in Breda, right-centre-left coalition in Castricum, left-centre-right in Leiden and Eindhoven, left-centre in Stede Broec), climate policy is perhaps less connected with the political colour of the party in power, as it is with leadership provided by individual civil servants. Most of the cities have developed some energy efficiency plans for the housing and transport sector and some quantitative targets, but few have measures on adaptation (see Table II).

From the research we can draw tentative conclusions.

First, the mandate of local authorities to develop climate policy comes primarily from their authority to make spatial policy. The siting of housing to promote the use of district heating, the separation of systems for collecting rainwater and sewage, the location of wind power plants, are all critical elements of spatial policy. Other authority comes from the mandate to make policies on housing and construction, local traffic and transport, environment and local government management.

Second, the BANS agreement provided the additional financial resources to stimulate and steer municipalities to develop climate policy building on previous subsidies for energy and local agenda 21 policies. It enabled cities to appoint climate coordinators to promote climate

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Table I. Comparative assessment of GHG emissions.

City	Population	GHG emissions in kt[a]	GHG per capita (t)		Sutainable energy use in ktonnes CO_2	% energy use sustainable
			With industry	Without industry[a]		
Amsterdam	743,000	8,300	11.2	4.5	27.4	0.330
Rotterdam	585,000	24,000	41.0	7.4	n.a.	n.a.
Eindhoven	210,000	1,200	5.7	3.9	0.3	0.025
Breda	140,000	1,040	7.4	4.3	1.1	0.106
Leiden	120,000	599	5.0	3.0	1.3	0.217
Castricum	35,000	147	4.2	3.5	n.a.	n.a.
Stede Broec	21,000	72	3.4	2.7	n.a.	n.a.

[a]Luttmer and Joosen (2005) and www.klimaatkaart.nl.

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Table II. Comparative assessment of climate policy.

City	Climate policy	Goal	Emission limitation	Adaptation projects
Amsterdam	Yes, active	Reduce 0.55 Mt in 2010; 40% reduction for city in 2025/1990. Climate neutral municipal buildings and services by 2015	Yes	Yes
Rotterdam	Yes, part of air quality policy	Reduce emissions by 50% in 2020/1990	Yes, on energy	Yes
Eindhoven	Yes, active/front runner	Climate neutral municipal buildings and services by 2020	Yes	No
Breda	Yes, active	Climate neutral municipal buildings and services in long-term through use of renewable energy. Reduce emissions by 6% in 2010/1990	Yes	No
Leiden	Yes, active	CO_2 neutral municipal buildings and services by 2030. Reduce emissions by 6% in 2010/1990. 5% of total energy use is sustainable in 2010	Yes	Yes
Castricum	Yes, active	To contribute to Dutch Kyoto goals	Yes	No
Stede Broec	Yes, active		Yes	Yes

policy (e.g. in Leiden and Stede Broec), to build local government capacity, and to implement specific measures. The BANS policy menu facilitated climate choices by small municipalities with limited financial and organizational capacity.

Third, although no data are available about the effectiveness of the BANS programme, the GHG reduction potential of the BANS for the year 2010 is estimated to be around 900 kt (SenterNovem 2006a). This reduction potential is only equal to about 2.7% of the annual national GHG reduction goals for that period. However, as the BANS programme is creating a structural basis for local climate measures by financing local knowledge and facilities (manpower), a larger GHG reduction potential is expected through a positive multiplier effect.

Fourth, climate policy at city level tends to focus more on mitigation than on adaptation. This may be because BANS focuses on mitigation, but adaptation is increasingly being prioritized by research programmes (e.g. Research programmes entitled Climate Changes

Spatial Planning, Living With Water, etc.) and municipalities as intense precipitation and heat waves are being experienced.

Fifth, the flexibility provided to cities allows wind rich cities to focus on wind energy and densely populated areas to focus on energy conservation. It can be observed that larger cities tend to develop more comprehensive policy while smaller cities tend to focus on individual projects and joint policies with neighbours. The capacity of the municipal organization to design and implement a comprehensive plan might play an important role. The larger cities already had an environmental department with the capacity to set up a programme making use of the subsidies, while smaller municipalities use the subsidy to appoint one climate coordinator.

Finally, the local setting is dynamic and it is exciting to watch how Dutch localities are rising to meet the climate challenge. Amsterdam, Rotterdam, Breda and Eindhoven aim to have climate neutral municipal buildings and services by 2020. Some of these cities are not just simply responding to national advice and subsidies, but are developing more ambitious policies than the national government, and where national subsidies are stopped, they are continuing these from their local budgets. In 2007, Dutch cities with a population over 100,000 jointly requested the new Environment minister to take measures enabling them to become climate neutral in 2020.

The development of climate policy in the Netherlands demonstrates the shift from government to governance, focusing on co-production of knowledge and policy within a multi-level governance framework, and the realization that policies are likely to have a higher compliance pull when they build on local initiative, knowledge and circumstances. However, there are risks—subsidies are often stopped by new governments and municipalities often lack tools to enforce policy goals. Besides, different environmental ministers have different views regarding the degree of freedom to be given to municipalities and whether policies should be determined more by markets, even though power is devolving slowly to local authorities. And while there is a greater trend to promote the integration of spatial policy with environmental policy, there is considerable jurisprudence that stands in the way of such integration.

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Note

1. The EPC is a coefficient that expresses the energy efficiency of a building. It is a calculated value and depends on characteristics of the building, its installation, and standardized behavior of its residents.

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